

**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF ILLINOIS**

MANUELA FILI, )  
Individually as Surviving Spouse and as )  
Special Administrator of the Estate of )  
MATTEO RAVASIO, Deceased, )  
and on behalf of all Surviving Beneficiaries, )  
Plaintiff, )  
v. )  
THE BOEING CO., a Delaware Corporation, and )  
ROSEMOUNT AEROSPACE, INC., a Delaware )  
Corporation, )  
Defendants. )

## **PLAINTIFF'S COMPLAINT & JURY TRIAL DEMAND**

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## **SUMMARY**

1. This action seeks justice for MATTEO RAVASIO, who was killed in the March 10, 2019 crash of Ethiopian Airlines Flight 302 (ET302) only minutes after take-off from Bole International Airport in Addis Ababa, Ethiopia.
2. Defendant, THE BOEING COMPANY (BOEING), designed, manufactured and sold the defective Boeing 737-8 MAX airplane used to operate ET302.
3. BOEING rushed the design, manufacture and certification of the Boeing 737-8 MAX airplane in pursuit of profit and to maintain its dominant market position as the world's leading manufacturer of commercial airplanes.
4. BOEING sold the 737-8 MAX airplane to airlines even though BOEING knew that the airplane was dangerously defective.
5. In its rush to get the Boeing 737-8 MAX to market, BOEING based the airframe's design on the existing Boeing 737NG model rather than designing a completely new airplane.
6. As part of the updated design, BOEING added larger, more fuel-efficient CFM LEAP-1B engines to the new MAX version of the Boeing 737.
7. The addition of the LEAP-1B engines affected the aerodynamic handling of the airplane by causing the 737-8 MAX's nose to dangerously pitch upward during certain flight parameters.
8. BOEING designed and added the Maneuvering Characteristics Augmentation System (MCAS) to address the 737-8 MAX's aerodynamic handling defects.
9. BOEING designed MCAS to automatically trim the Boeing 737-8 MAX's nose down if one of the airplane's two Angle of Attack (AOA) sensors showed that the nose of the airplane was too high and the airplane was at risk of stalling.

10. BOEING intentionally hid from its customers, including Ethiopian Airlines, that the Boeing 737-8 MAX had aerodynamic handling defects and that it had installed MCAS in its 737-8 MAX airplanes to address the defect.

11. BOEING failed to properly brief its own test pilots regarding important details regarding MCAS, including its authority to quickly push down the nose of Boeing 737-8 MAX and, accordingly, the test pilots did not perform an adequate safety review of the system.

12. BOEING sold the Boeing 737-8 MAX to airlines despite knowing that a safety feature known as the angle of attack disagree light, designed to immediately inform pilots that one of the airplane's angle of attack sensors had failed, was not working in the airplane.

13. BOEING obtained Federal Aviation Administration (FAA) certification for the Boeing 737-8 MAX by intentionally, recklessly and/or negligently underestimating the odds that MCAS would erroneously force the airplane's nose down and by overestimating the ability of pilots without MCAS training to respond to MCAS-created handling emergencies.

14. BOEING represented to the FAA that MCAS was a benign computer code programmed in the airplane's Flight Control Computer that would cause the Boeing 737-8 MAX to "feel" to its pilots like it handled the same as the Boeing 737NG; to the contrary, MCAS was a deadly defective feature.

15. Based on BOEING's misrepresentations, the FAA did not require any flight or simulator training for qualified Boeing 737NG pilots transitioning to the Boeing 737-8 MAX. The short, self-administrated online computer course that BOEING created for transitioning pilots did not even address MCAS or any potential emergencies connected to MCAS.

16. On October 28, 2018, Lion Air Flight 610 (JT610), a Boeing 737-8 MAX, crashed into the Java Sea shortly after takeoff from Jakarta, Indonesia.

17. The investigation into the JT610 crash quickly revealed that the airplane’s MCAS had repeatedly pushed the airplane’s nose down toward the ocean, even as its pilots desperately fought to regain control.

18. The investigation into the JT610 crash further revealed that the airplane’s MCAS had repeatedly pushed the nose of the airplane down toward the ocean because the airplane’s left AOA sensor had failed and sent erroneous data to the MCAS, which subsequently “believed” that the airplane’s nose was too high when, in fact, it was not.

19. Long before March 10, 2019, BOEING knew that design defects in the Boeing 737-8 MAX had caused the loss of JT610, but failed to recommend that its customers ground the airplane until the defects were fixed.

20. Even as it quietly worked on design changes to address the defects, BOEING told the public, the FAA, and BOEING’s customers that the 737-8 MAX was safe to fly because grounding the airplane would have cost BOEING profits.

21. Ethiopian Airlines relied on BOEING’s representations that the Boeing 737-8 MAX was safe to fly in continuing to operate the airplane after the JT610 crash.

22. The same design defects that caused the loss of JT610 and its 189 passengers and crew also caused the loss of ET302 and all 157 souls on board.

23. Shortly after takeoff, while the airplane was at a low altitude, ET302’s MCAS suddenly engaged and pushed the airplane’s nose down toward the ground.

24. ET02’s MCAS had received erroneous and implausible data inputs from the airplane’s left AOA sensor, which caused MCAS to “believe” that the airplane’s nose was too high and triggered the automatic nose-down trim inputs.

25. ET302's pilots were unable to regain control of the airplane, despite following BOEING's recommended procedures, and it crashed.

26. BOEING put its financial interests ahead of the safety of passengers and flight crews when it rushed the design, manufacture and certification of the Boeing 737-8 MAX, and when it knowingly and with conscious indifference misrepresented to the public, the FAA and BOEING's customers that the airplane was safe to fly, which BOEING shockingly and with reckless disregard continued to do even after the crash of ET302.

27. This case focuses on BOEING's gross negligence, which showed a wanton disregard for the safety of flight crews and passengers exposed to the Boeing 737-8 MAX's deadly defects, and seeks compensatory and punitive damages in order to deter BOEING from future wrongful conduct that compromises aviation safety.

### **PARTIES**

28. At all relevant times, Decedent, MATTEO RAVASIO, was a resident of the town of Bergamo, Italy.

29. Decedent, MATTEO RAVASIO, is survived by his wife, Plaintiff, MANUELA FILI, his daughter CR, a minor and his mother GIOVANNA FRANCESCHIN.

30. Plaintiff, MANUELA FILI, is the duly-appointed Special Administrator of the Estate of her deceased husband, MATTEO RAVASIO, having been appointed by Order of the Circuit Court of Cook County, Law Department, under the provisions of 740 ILCS 180/2.1. (Exhibit A).

31. Plaintiff, MANUELA FILI, as Special Administrator of the Estate of her deceased husband, MATTEO RAVASIO, brings this action on behalf of the Decedent's estate and his surviving heirs at law, next of kin and wrongful death beneficiaries.

32. Decedent, MATTEO RAVASIO, was 51 years old when he was killed in the ET302 crash en route to Africa to participate in a humanitarian project for his employer Africa Tremila.

33. Matteo was a highly educated and accomplished man with an educational and professional background in economics and business. A man of great generosity with a deep commitment to public service, Matteo brought his keen intellect and his compassion to his professional life. For the past fifteen years Matteo had been working with the non-profit organization Africa Tremila based in Bergamo, Italy. Africa Tremila is an organization that established humanitarian programs to provide healthcare, education and food to families in developing countries. At the time of his death, Matteo was the Treasurer for Africa Tremila, where he played a large role in important projects including the opening of two schools for children in Madagascar and a health clinic in Zimbabwe. Matteo was also known to offer his services and business advice on a pro bono basis to individuals without financial means who would visit his offices seeking professional assistance.

34. After ten years of courtship, Matteo married his great love Manuela Fili. Just over three years ago, Manuela and Matteo were blessed with the birth of their minor daughter CR. Matteo was a devoted husband and father who is survived by his grieving widow, their young daughter and his mother. Manuela has suffered a devastating and unrecoverable loss and Matteo's daughter continues to ask when her father will be returning home. This loss is felt by the other Fili and Ravasio relatives, as well, as Matteo was truly devoted to his family and to Manuela's family. Especially after the recent unexpected death of his father, Matteo was the primary source of comfort for his elderly mother, who is now bereft by the loss of her husband and her son in short succession.

35. Matteo traveled often to Africa to bring assistance and hope to those who have none. At home, he was the main income and support for his family, for both his wife and child and his mother, who was widowed a few years ago after Matteo's father was struck by a motorcyclist while crossing the street. Matteo lived his life generously devoted to two causes, his own loving family and the great family of the needy in Africa and beyond.

36. At all relevant times, Defendant, BOEING, was, and remains, a Delaware corporation registered with the Illinois Secretary of State as doing business in Illinois, with its corporate headquarters and principal place of business located in Chicago, Illinois.

37. At all relevant times, BOEING made critical and fateful decisions regarding the design, manufacture and marketing of the Boeing 737-8 MAX airplane at its corporate headquarters in Chicago, Illinois.

38. At all relevant times, Defendant, ROSEMOUNT AEROSPACE, INC., (ROSEMOUNT) was, and remains, a Delaware corporation with its principal place of business located in Burnsville, Minnesota.

39. At all relevant times, ROSEMOUNT was, and remains, in the business of designing, manufacturing and selling aerospace components for use in commercial airplanes, including the AOA sensors used in the Boeing 737-8 MAX airplanes.

40. At all relevant times, ROSEMOUNT transacted, and continues to transact, regular and substantial business with Chicago-based BOEING in Cook County, Illinois.

#### **JURISDICTION AND VENUE**

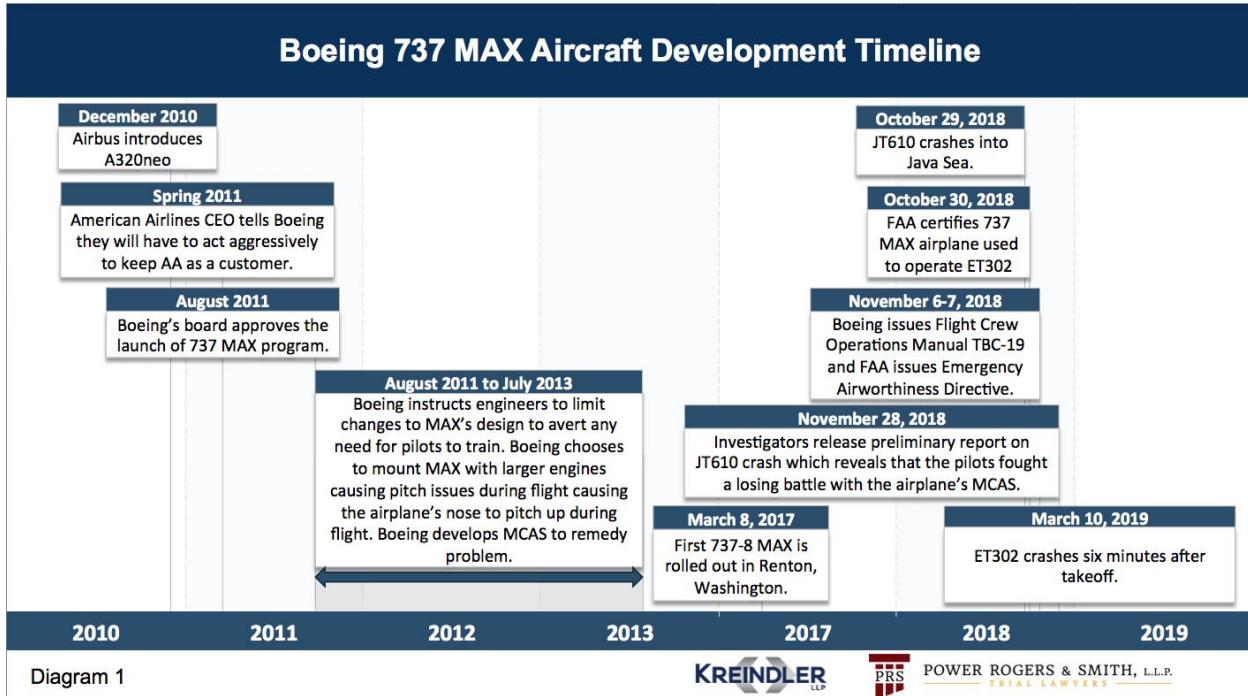
41. The jurisdiction of this Court is invoked pursuant to 28 U.S.C. §1332(a)(2) based on diversity of citizenship because the matter in controversy exceeds the sum or value of \$75,000,

inclusive of interest and costs, and arises between citizens of U.S. states and citizens of foreign states.

42. Venue is proper in the Northern District of Illinois: pursuant to 28 U.S.C. §1391(b)(1) because BOEING's corporate headquarters and principal place of business are located in this judicial district at 100 North Riverside, Chicago, Cook County, Illinois 60606; pursuant to 28 U.S.C. §1391(b)(3) because ROSEMOUNT transacted, and continues to transact regular and substantial business with Chicago-based BOEING in Cook County, Illinois; and pursuant to 28 U.S.C. §1391(b)(2) because BOEING made critical and fateful decisions regarding the design, manufacture and marketing of the BOEING 737-8 MAX airplane at its corporate headquarters.

## FACTS

### BOEING PUT PROFIT AHEAD OF SAFETY IN ITS RUSH TO BRING THE BOEING 737-8 MAX TO MARKET



43. Within the airline manufacturing industry, there exists a global duopoly between BOEING and Airbus, with the two companies making up 99% of commercial jet orders worldwide.

44. In or around 2011, BOEING faced a serious business challenge upon learning that some of its most important customers, including American Airlines, were planning to put in orders for the Airbus A320neo, a new airplane model that Airbus advertised as “the world’s most advanced and fuel-efficient single-aisle aircraft.”

45. With Airbus as its chief business rival, BOEING stood to lose a tremendous amount of money and market share if it fell behind Airbus in the production of fuel-efficient airplanes.

46. BOEING determined that it would take too long to design and manufacture a new airplane to compete with the Airbus A320neo, and instead made the fateful decision to use its existing 737 model, the 737NG, as the basis for what would become the Boeing 737-8 MAX.

47. In August of 2011, BOEING’s Board of Directors approved the launch of the Boeing 737 MAX program.

48. BOEING’s decision, made at the highest levels of the company, to use the existing design of the Boeing 737NG rather than designing an entirely new airplane, was made to increase BOEING’s profit, because:

- a. Using the existing design saved BOEING significant design and development costs;
- b. Using the existing design permitted BOEING to rush the design and manufacture of the Boeing 737-8 MAX and get it to market quickly so that BOEING would not lose business to Airbus;

- c. Using the existing design permitted BOEING to offer the Boeing 737-8 MAX to its customers, including Ethiopian Airlines, with the selling point that pilots already qualified to fly the Boeing 737NG could move to the Boeing 737-8 MAX without undergoing any meaningful transition training, and without needing to be trained and tested in flight simulators and/or in the airplane before flying revenue flights;
- d. Using the existing design permitted BOEING to take advantage of its Organization Designation Authorization (ODA), granted to it by the FAA, to streamline and speed the certification of the Boeing 737-8 MAX as an amendment to the Boeing 737 type certificate; and
- e. Using the existing design permitted BOEING to produce an updated, fuel-efficient airplane to compete with the Airbus A320neo more quickly and cost-effectively than if BOEING had developed a new model airplane.

**BEFORE IT MARKETED AND SOLD THE BOEING 737-8 MAX TO AIRLINES, BOEING KNEW THAT THE AIRPLANE HAD INHERENTLY DANGEROUS AERODYNAMIC HANDLING DEFECTS THAT COMPROMISED SAFE OPERATION OF THE AIRPLANE**

49. In designing the 737-8 MAX, BOEING made multiple modifications and updates to the structure and flight control systems of the 737NG.

50. As part of the modifications, BOEING replaced the CFM56-7 engines used in the Boeing 737NG with larger, more fuel-efficient CFM LEAP-1B engines.

51. Because the CFM LEAP-1B engines were substantially larger than the CFM56-7 engines, BOEING had to mount the engines higher and farther forward on the 737-8 MAX's wings and modify the airplane's nose gear to provide more ground clearance for the new, bigger engines.

52. The increased power and new location of the CFM LEAP-1B engines gave the Boeing 737-8 MAX a propensity to abnormally pitch up under certain flight parameters, creating

a risk that the airplane would suffer an aerodynamic stall and crash.

53. Pursuant to the FAA's Airworthiness Standards for Commercial Aircraft<sup>1</sup>: "No abnormal nose-up pitching may occur.... In addition, it must be possible to promptly prevent stalling and to recover from a stall by normal use of the controls."

54. Despite knowing that the Boeing 737-8 MAX had aerodynamic handling defects, BOEING pressed on with the development of the airplane and created MCAS to mitigate the risk of a potential stall and to force the 737-8 MAX to handle more like the Boeing 737NG. However, MCAS failed to mitigate such a risk and on or before March 10, 2019, BOEING knew and/or should have known of that failure but did not take action thereby putting the flying public at risk, including the decedent. Such acts and omissions demonstrate reckless disregard and conscious indifference for the safety of the flying public at risk including the Decedent.

#### **THE BOEING 737-8 MAX'S MCAS WAS DEFECTIVE**

55. MCAS is a flight control computer code managed by the Boeing 737-8 MAX's Flight Control Computer. BOEING designed and installed MCAS in the Boeing 737-8 MAX in order to address the airplane's aerodynamic handling defects.

56. BOEING has claimed that it added MCAS to the Boeing 737-8 MAX to give the airplane the same "feel" to pilots during manual flight as the BOEING 737NG.

57. MCAS commands nose down trim when the active Flight Control Computer receives data from one of the airplane's AOA sensors that the aircraft's nose has pitched above a threshold level.

58. The AOA sensors, mounted on the left and right sides of the nose of the Boeing 737-8 MAX, are intended to measure the angle between the airplane's wings and oncoming airflow

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<sup>1</sup> 14 CFR Sec. 25.203(a) – Stall Characteristics.

for purposes of detecting the risk of aerodynamic stall.



59. BOEING designed MCAS to take data from one of the 737-8 MAX's two angle of attack (AOA) sensors and to alternate the sensor from which it accepts data each flight.

60. ROSEMOUNT designed and manufactured the AOA sensors installed on the Boeing 737-8 MAX, including the sensors installed on ET302, and worked with BOEING in the development of the BOEING 737-8 MAX.

61. Pitch control in the Boeing 737-8 MAX is controlled by hydraulically powered elevators and an electrically powered horizontal stabilizer in the airplane's tail.

62. The Boeing 737-8 MAX's elevators are controlled by forward and aft movement of the pilots' control columns (or yokes.)

63. Movement of the Boeing 737-8 MAX's horizontal stabilizer can be controlled automatically, through autopilot, or MCAS-commanded automatic trim inputs, which drive a single electric trim motor.

64. Horizontal stabilizer movement in the BOEING 737-8 MAX can also be controlled

manually by engaging the pitch trim switches on the pilots' yokes, which drive the electric trim motor, or by rotating the airplane's pitch trim wheel.

65. Trim inputs in the BOEING 737-8 MAX turn a jack screw in the airplane's tail, which raises or lowers the leading edge of the horizontal stabilizer.

66. A Boeing 737-8 MAX airplane pilot can countermand an MCAS-commanded nose down input by engaging yoke-mounted electric pitch trim switches to trim the nose back up, but the airplane's MCAS will reset, reactivate and push the nose down again when the pilot stops trimming the nose back up.

67. The design decision by BOEING to have MCAS reset and reactivate after a pilot has countermanded an MCAS nose down input created the danger that MCAS would fight against the efforts of pilots trying to save airplanes from crashing.

68. MCAS will continue to command the electric trim to push the nose down even if the pilots are desperately pulling back on the airplane's yokes to pull the airplane's nose back up because BOEING designed the system so that it would not disengage when pilots pulled back on their yokes.

69. MCAS will continue to command the electric trim to push the nose down even if an airplane is dangerously low and at risk of crashing because BOEING designed the system so that it did not consider an airplane's altitude or proximity to terrain in its programming. This design decision caused MCAS to continue to trim ET302's nose down when the plane was at low altitude.

70. BOEING did not design and install in the Boeing 737-8 MAX an automatic ground collision avoidance system, leaving the airplane without an automatic safeguard that would have protected it from MCAS-created emergencies that put the airplane in danger of crashing.

71. BOEING designed MCAS so that the system did not consider, and/or disregarded,

the Boeing 737-8 MAX's airspeed in deciding whether to automatically trim the airplane's nose down. This design decision caused MCAS to trim ET302's nose down even when the airspeed indicated that the airplane was not at risk of stall, and at airspeeds that made manual recovery of the airplane overly difficult or impossible.

72. The Boeing 737-8 MAX has a STAB TRIM PRI cutout switch and a STAB TRIM B/U cutout switch, both located on the cockpit's control stand. If either of these switches are positioned to CUTOFF, the autopilot, MCAS, and manual electric trim inputs are disconnected from the stabilizer electric trim motor.

73. BOEING's MCAS design does not permit pilots to disengage MCAS; the only way that pilots can stop MCAS from forcing the airplane's nose down is to disengage the airplane's electric trim. After disengaging the electric trim, however, the pilots would not be able to use the electric trim to control pitch, and would only be able to pull the nose of the airplane up by trying to pull back on the control yokes and attempting to turn the manual pitch trim wheel.

74. BOEING knew that after an MCAS-commanded nose down emergency the aerodynamic forces on the horizontal stabilizer could be too great for pilots to control manually without the use of the electric trim.

75. BOEING should have provided Boeing 737-8 MAX pilots with the ability to disengage a malfunctioning MCAS without losing their ability to control pitch with the airplane's electric pitch trim.

76. BOEING did not tell its customer airlines or pilots transitioning to the Boeing 737-8 MAX that it had incorporated MCAS into the airplane, or that MCAS would automatically force the airplane's nose toward the ground if the selected AOA sensor "told" the system that the nose of the airplane was angled too high.

77. BOEING decided that its customer airlines and 737-8 MAX pilots did not need to know about MCAS or to undergo any MCAS training, since MCAS was supposed to be an automatic system that required no pilot input to operate.

78. BOEING also decided that pilots transitioning from the Boeing 737NG did not need to be trained in a simulator and/or in the airplane, and in particular did not need simulator training or testing on how to handle emergencies caused by the airplane's MCAS.

79. As a result of BOEING's decisions, the pilots of ET302 had not received any simulator training or testing on how to handle emergencies caused by the Boeing 737-8 MAX airplane's MCAS.

80. BOEING knowingly failed to conduct a proper failure modes and effect analysis during development of the Boeing 737-8 MAX to ensure that the airplane's MCAS was safe.

81. In particular, BOEING failed to properly consider the likelihood that Boeing 737-8 MAX AOA sensors may fail and mistakenly trigger MCAS to push 737-8 MAX airplanes into a dive toward the ground.

82. BOEING did not sufficiently test the Boeing 737-8 MAX's MCAS during development to ensure that the automated system would not create a safety of flight problem if it were to receive erroneous data from one of the airplane's AOA sensors.

83. MCAS was essential to BOEING's business purpose of quickly manufacturing and selling the Boeing 737-8 MAX, because the airplane could not otherwise appear certifiable to the FAA without it.

84. In Boeing's rush to get the 737-8 MAX to market, BOEING knowingly compromised the safety of Boeing 737-8 MAX crews and passengers.

**BOEING DECEIVED THE FAA AND PURCHASERS OF THE BOEING 737-8 MAX**

**BY ASSERTING THAT CRITICAL SAFETY FEATURES NEED NOT BE STANDARD  
AND OFFERING THEM ONLY AS OPTIONAL FEATURES AT EXTRA COST**

85. Safety should never be an option in the design, manufacture and sale of a commercial airplane. BOEING maintains that: “[s]afety is the primary consideration when Boeing engineers design an airplane. In addition to meeting regulatory requirements before certification, each airplane model must meet Boeing’s time-proven design standards. Often these standards are more stringent than regulatory requirements.”<sup>2</sup> However, BOEING’s acts and omissions detailed throughout this Complaint demonstrate that safety is not BOEING’s primary consideration but rather it is corporate profits.

86. BOEING put its business interests ahead of safety in its design, manufacture and marketing of the Boeing 737-8 MAX airplane when it decided to charge its customers extra for the installation of important safety features.

87. In marketing the Boeing 737-8 MAX airplane to potential owners and operators, BOEING offered a number of optional for-purchase safety upgrades.

88. One of those upgrades, the Angle of Attack Indicator, if purchased and installed, would instantly display to the pilots the real-time data from both AOA sensors, providing valuable safety information to the pilots.

89. The information provided by the Angle of Attack Indicator, if purchased and installed, would assist pilots in diagnosing why a Boeing 737-8 MAX’s MCAS was erroneously pushing the airplane down toward the ground.

90. BOEING did not offer the Angle of Attack Indicator as standard equipment in the Boeing 737-8 MAX because it wanted to be able to offer the base airplane at a low price point in

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<sup>2</sup> <https://www.boeing.com/company/about-bca/aviation-safety.page> (Obtained May 1, 2019).

order to make it more competitive, while at the same time profiting on the sale of the optional safety feature to the airlines that ordered it.

91. BOEING and the FAA permitted the Boeing 737-8 MAX airplanes to be certified and sold without Angle of Attack Indicators, thus depriving flight crews of critical information and in doing so, exposed the passengers and crew of ET302 to increased danger.

92. BOEING offered a second optional safety feature called the Disagree Light, which would activate if data from the Boeing 737-8 MAX's two AOA sensors data did not match.

93. The Disagree Light, if purchased and installed, would instantly show 737-8 MAX pilots that one of the AOA sensors was malfunctioning.

94. The Disagree Light, if purchased and installed, would assist 737-8 MAX pilots in diagnosing why the airplane's MCAS was erroneously pushing the airplane down toward the ground.

95. The Disagree Light had been standard equipment on prior Boeing 737 models; BOEING could have made it active in every Boeing 737-8 MAX airplane for little or no cost.

96. BOEING initially decided that the Disagree Light would be standard equipment in the Boeing 737-8 MAX, but then decided to make it active only for airlines who paid extra for the safety feature.

97. BOEING did not offer the Disagree Light as standard equipment in the Boeing 737-8 MAX because it wanted to be able to offer the base airplane at a low price point in order to make it more competitive, while at the same time profiting on the sale of the optional safety feature to the airlines that ordered it.

98. BOEING and the FAA permitted the Boeing 737-8 MAX airplane to be certified and sold without the Disagree Light as standard equipment, thus depriving aircrews of critical

information and in doing so, exposed the passengers and crew of ET302 to increased danger.

99. Ethiopian Airlines relied on BOEING's representations that the Boeing 737-8 MAX airplane was safe and airworthy without the Angle of Attack Indicator or the Disagree Light when it purchased Boeing 737-8 MAX airplanes, including the airplane that operated ET302, without those safety features.

100. Ethiopian Airlines relied on BOEING's and the FAA's certification of the Boeing 737-8 MAX as airworthy without the incorporation of the optional safety features when it purchased Boeing 737-8 MAX airplanes, including the airplane that operated ET302, without those safety features.

**BOEING MISUSED AND ABUSED ITS ORGANIZATION DESIGNATION  
AUTHORITY TO GAIN FAA CERTIFICATION OF THE BOEING 737-8 MAX**

101. BOEING abused the trust and authority delegated to it by the FAA when BOEING prioritized its financial interests ahead of aviation safety during the compliance activities that resulted in the certification of the BOEING 737-8 MAX.

102. For many years, the FAA has increasingly trusted and relied on BOEING and other aviation manufactures to conduct the evaluation and testing that result in the certification of airplanes.

103. In recent years, the FAA has become overly pro-business and deferential to BOEING.

104. BOEING and its allies in the aviation industry have perverted the FAA certification process so that an FAA airworthiness-certification of an airplane or airplane system no longer means that the FAA independently considered and determined whether that airplane or airplane system was safe. For example:

- a. BOEING and its allies in the aviation industry have successfully lobbied the FAA to deregulate and streamline the certification process;
- b. BOEING and its allies in the aviation industry have successfully lobbied against new rulemaking by the FAA;
- c. BOEING and its allies in the aviation industry have successfully lobbied the FAA to forgo enforcement actions or penalties for industry violations of federal safety regulations and orders in lieu of seeking voluntary compliance from the industry; and
- d. BOEING and its allies in the aviation industry have successfully lobbied the FAA to confer on aviation manufacturers what previously had been the FAA's responsibility: to review and approve new features on aircraft.

105. BOEING has spent a considerable amount of money lobbying our federal government; in 2018, it invested more than \$15,000,000 into its efforts to influence federal lawmaking and to push for less regulation and oversight.

106. The FAA's top leadership has been staffed with aviation industry insiders, including officials who previously worked for industry lobbying groups that have successfully advocated for reduced regulation and oversight of the very aviation manufacturers that these officials now must impartially regulate.

107. The FAA's leadership has been dangerously and intentionally tainted by its close relationship with the aviation industry, with key FAA members putting aviation industry interests ahead of aviation safety. For example:

- a. The FAA sided with BOEING's financial interests over aviation safety in its certification of the Boeing 737-8 MAX;

- b. The FAA sided with BOEING's financial interests over aviation safety in not grounding the Boeing 737-8 MAX after the JT610 disaster;
- c. The FAA continued to side with BOEING over aviation safety even after the ET302 disaster, with the U.S. shamefully being the last country to ground the Boeing 737-8 MAX; and
- d. The FAA's leadership continues to side with BOEING over aviation safety, as evidenced by the Acting FAA Administrator's March 27, 2019 testimony before the Senate Transportation Committee's Subcommittee on Aviation and Space, during which he downplayed the danger of MCAS and blamed the deceased pilots of the two crashed airplanes for not being able to save their airplanes and the lives of the passengers and crew, despite having actual and/or constructive knowledge to the contrary.

108. BOEING and the aviation industry have pursued two goals:

- a. To reduce the federal regulatory burden on the industry; and
- b. To immunize the industry from liability for defects in airplanes that the FAA has "certified," when, in fact, that certification largely has been outsourced by the FAA to the industry itself.

109. Aviation industry lobbying groups, including the Aerospace Industries Association of America, Inc., on whose Board BOEING CEO Dennis Muilenburg serves, including a term as Chairman in 2017, have recently filed amicus briefs in the U.S. Supreme Court seeking immunity for aviation manufacturers from potential products liability claims concerning airplanes or aviation products that have been "certified" by the FAA.

110. In 2005, the FAA adopted the ODA program that licensed BOEING to designate its own employees who would review and approve BOEING's designs on behalf of the FAA.

111. Under its ODA, BOEING had a duty of integrity in its dealings with the FAA. BOEING violated that duty by misrepresenting to the FAA that the Boeing 737-8 MAX was safe to fly when BOEING knew that the airplane was not safe.

112. Under its ODA, BOEING had a duty to notify the FAA regarding any issue that might create an unsafe flight condition so that the FAA could investigate and remediate the issue. BOEING violated that duty when it did not come clean to the FAA about the hazards of MCAS.

113. Under its ODA, BOEING had a duty to use care, diligence, judgment and responsibility when performing compliance activities. BOEING did not satisfy that duty and instead promoted its business interests by rushing the certification of an unsafe airplane.

114. In 2012, the FAA Inspector General issued a report that found that the FAA was not backing its employees in their efforts to hold BOEING accountable and that FAA safety inspectors feared retaliation for raising problems regarding BOEING's products or its actions.

115. In 2015, the FAA's Inspector General found that the FAA lacked effective staffing and were not performing proper oversight of ODA manufacturers.

116. The improper relationship between the FAA and Boeing continued and existed on March 10, 2019, when ET302 crashed. The FAA Inspector General has launched an audit into the activities that lead to the certification of the Boeing 737-8 MAX.

117. BOEING took advantage of the FAA's abdication of its responsibilities to serve as an independent check on the safety of the Boeing 737-8 Max and even praised the FAA's hands-off approach.

118. On a 2017 conference call with Wall Street investors, BOEING CEO Dennis Muilenburg praised the FAA’s “streamlined” certification process that had helped BOEING bring new models, including the 737 MAX series of airplanes, quickly to market.

119. Mr. Muilenburg complimented the government’s “focus on deregulation and simplifying processes,” for which BOEING was a “strong proponent.”

120. Mr. Muilenburg went on to compliment the FAA: “Things like FAA certification processes is one place that we’re seeing some solid progress. That’s helping us more efficiently work through certification on some of our new model aircraft such as the MAX as it’s going through tests and entering into service. So we’re already seeing some benefits there of some of the work that’s being done with the FAA.”

121. The “streamlining” of the Boeing 737-8 MAX’s certification process meant that BOEING was largely able to conduct the certification of its own airplane. The benefits were to BOEING’s profits, not the safety of the 737-8 MAX.

122. The “streamlined” certification of the Boeing 737-8 MAX, which BOEING largely performed itself, allowed BOEING to sell the defective BOEING 737-8 MAX airplane to airlines around the world and to date has caused the loss of two airplanes and the deaths of 346 people.

123. On the day that ET302 crashed, 59 airlines worldwide were operating 357 Boeing 737-8 MAX airplanes and BOEING had firm orders for over 5,000 more.

124. An untold number of passengers and crew members in the U.S., Ethiopia and around the world were put at risk because BOEING was permitted to sell a defective and unsafe airplane based on improper certification.

125. This case will focus on the inappropriate relationship between the FAA and BOEING and will reveal how this alliance between government and industry compromised the

safety of flight crew and passengers in permitting the unsafe Boeing 737-8 MAX to be certified and sold.

126. Utilizing its ODA, BOEING developed the Product Specific Certification Plan (PSCP) for the Boeing 737-8 MAX that set forth the activities necessary to demonstrate to the FAA that the airplane met all federal design requirements.

127. BOEING's plan was to push for certification of the BOEING 737-8 MAX as an amendment to the BOEING 737 type certificate because, if accepted as an amendment, it would limit review of the new design and speed its certification at the least cost to BOEING.

128. BOEING applied for an amended type certificate for the Boeing 737-8 MAX in January of 2012.

129. The FAA, relying on BOEING's misrepresentations, determined in February of 2012 that the MAX project qualified as an amended type certificate and that its certification could be managed by Boeing under its ODA.

130. BOEING, by misusing the FAA ODA system, gained certification of the Boeing 737-8 MAX in March of 2017.

131. The certification of the Boeing 737-8 MAX was supposed to signify that the airplane met a "minimum level of safety" because its design complied with federal requirements.

132. The FAA relied on BOEING's representations that the Boeing 737-8 MAX met the "minimum level of safety" and complied with all applicable federal requirements.

133. The Boeing 737-8 MAX, however, did not meet a "minimum level of safety" and should never have been certified.

134. As a new feature, the design and functioning of MCAS was required to be reviewed and approved by the FAA, but a meaningful review of MCAS was not completed during the

compliance activities that preceded the certification of the Boeing 737-8 MAX and was not completed even after the crash of JT610.

135. After initially retaining the direct authority to review the safety of MCAS because it was a new feature, the FAA ultimately released the MCAS safety review to BOEING under BOEING's ODA.

136. BOEING did not provide the FAA with sufficient information regarding the functioning of MCAS during the design review process that preceded the certification of the Boeing 737-8 MAX. In particular:

- a. BOEING did not test for the possibility of an AOA sensor failure causing MCAS-commanded nose down during any of the simulator or flight test evaluations of the Boeing 737-8 MAX conducted to support the airplane's certification;
- b. BOEING did not provide its own test pilots with sufficient information regarding the MCAS design and function and did not properly test or evaluate the system's safety;
- c. The FAA did not require BOEING to test for the possibility of AOA sensor failure because BOEING violated its duty under the FAA ODA to inform the FAA that an AOA failure could create a handling emergency;
- d. BOEING's safety analysis understated the authority (or power) of the MCAS to trim the horizontal stabilizer and force the airplane's nose down;
- e. BOEING's safety analysis did not consider that MCAS would reset and continue to activate when pilots countermanded MCAS-commanded nose down trim by using manual electric trim to bring the nose back up, a design flaw that causes MCAS to fight against pilots' attempts to bring the nose of the airplane up; and

f. BOEING's safety analysis determined that a failed AOA sensor would not cause an MCAS-created safety of flight problem; this decision permitted the certification of a design that has caused two aviation disasters based on a single point of failure.

137. By misusing its ODA, BOEING was able to quickly achieve a mass production level of the Boeing 737-8 MAX and other MAX variants.

138. BOEING continued to misrepresent to the FAA that the Boeing 737-8 MAX was safe, even after the crash of JT610, because BOEING would suffer significant financial losses if the FAA grounded the airplane. In doing so, BOEING chose to prioritize its financial interests ahead of the safety of crew members and passengers.

139. BOEING continued to misrepresent to the FAA that the Boeing 737-8 MAX was safe, even after the crash of JT610, even though BOEING knew that MCAS had caused the crash.

140. The FAA relied on BOEING's assurances regarding the safety of the Boeing 737-8 MAX in not grounding the airplane after the JT610 disaster.

**BOEING CALLOUSLY COMPROMISED SAFETY  
IN ITS RUSH TO PRODUCE THE BOEING 737-8 MAX**

141. BOEING put its financial interests ahead of safety in its push to produce Boeing 737-8 MAX airplanes.

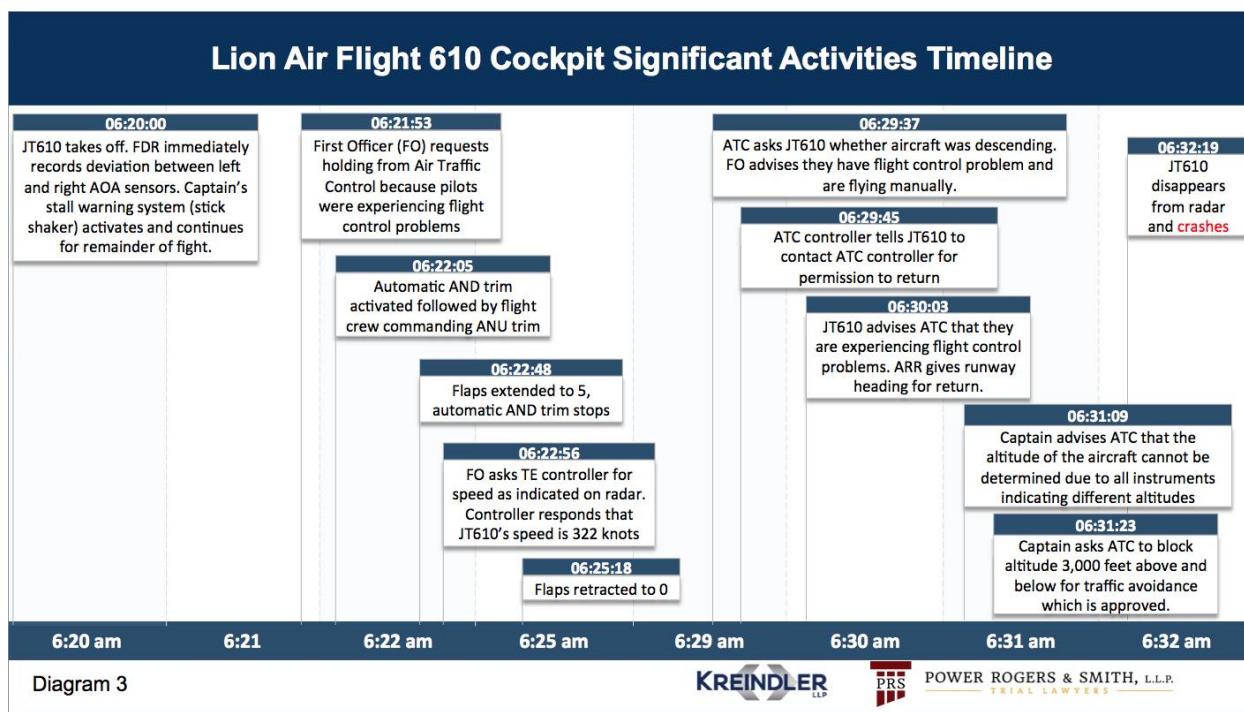
142. BOEING perceived that its financial interests would be best served by quickly manufacturing as many Boeing 737-8 MAX airplanes as possible in order to better compete with the Airbus A320neo.

143. BOEING drove its employees to unsafe work production levels and ignored complaints that its production schedule was unsafe.

144. BOEING ignored its employees' complaints that its work production expectations and production schedule were causing manufacturing mistakes, including dangerous mistakes concerning the airplane's wiring.

145. BOEING ignored its employees' complaints that its work production expectations and production schedule had caused foreign object debris (FOD) to be left in Boeing 737-8 MAX airplanes, which could pose dangers to the airplane's wiring, including wiring associated with the airplane's AOA sensors and Flight Control Computer.

**THE CRASH OF LION AIR FLIGHT 610 AND THE DEATH OF 189 PEOPLE WAS TRAGIC PROOF AND NOTICE TO BOEING THAT THE BOEING 737-8 MAX POSED A CLEAR AND PRESENT DANGER TO PASSENGERS AND CREW**



146. On October 28, 2018, JT610, a Boeing 737-8 MAX, crashed into the Java Sea shortly after takeoff from Jakarta, Indonesia.

147. JT610 took off at 0620 a.m. local time in Jakarta.

148. Shortly after takeoff, the captain's stall warning system (stick shaker) activated and the airplane's MCAS suddenly pushed the nose of the airplane down for ten seconds.

149. One of JT610's left AOA sensor had failed and sent erroneous data to the airplane's Flight Control Computer, causing the Captain's stall warning system (stick shaker) to go off and the MCAS to activate and trim the airplane's nose down.

150. JT610's flight crew responded to the MCAS's unsafe action by manually trimming up the nose using the airplane's electric trim, but as soon as the crew finished, the MCAS reactivated and again dove the airplane down.

151. JT610's flight crew fought against the airplane's MCAS for the remainder of the flight while attempting to return the airplane to Jakarta for an emergency landing.

152. About 11 minutes after takeoff, JT610 crashed into the Java Sea.

153. The inability of the JT610's flight crew to recover the airplane from the MCAS-created emergency demonstrated that the Boeing 737-8 MAX violated the FAA's Airworthiness Standards for Commercial Aircraft,<sup>3</sup> which requires that airplanes must be safely controllable and maneuverable during all phases of flight and that it must be possible to make safe and smooth transitions from one flight condition to another without exceptional piloting skill, alertness, or strength.

154. Investigators quickly discovered that JT610's left AOA sensor had sent erroneous data to the airplane's MCAS, which then commanded the airplane into a downward dive.

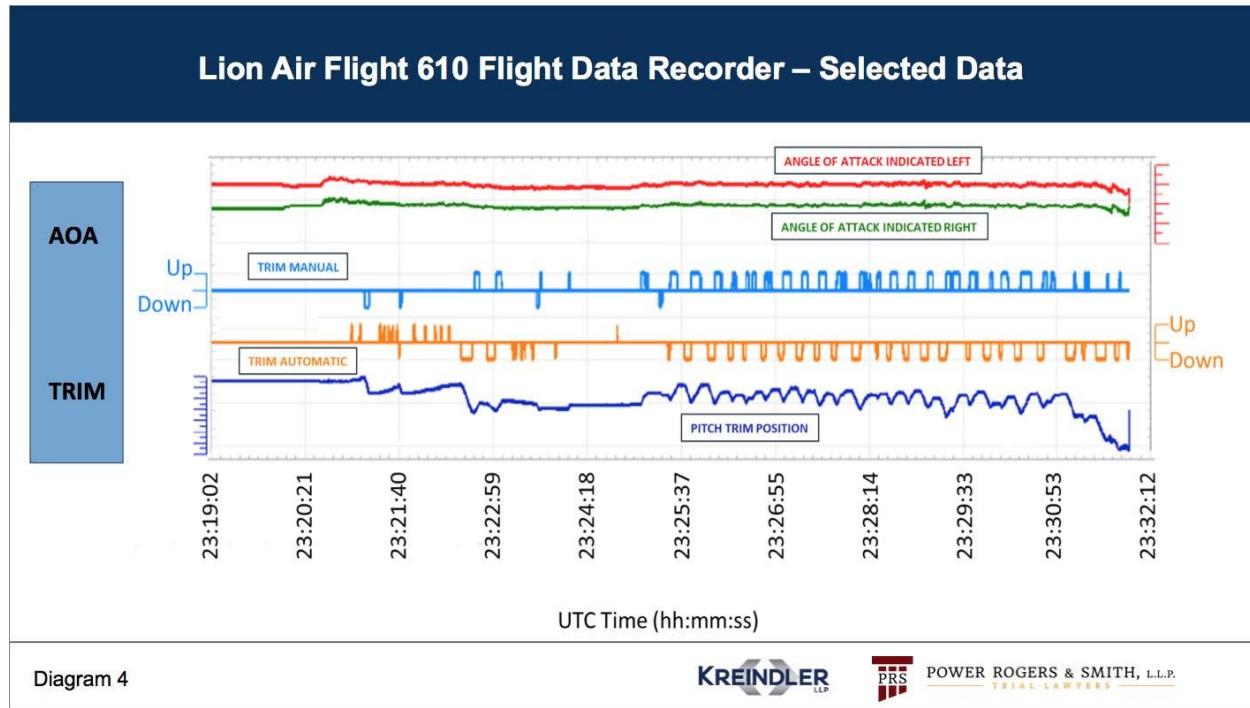
155. Investigators also learned that BOEING had designed MCAS to reset each time pilots pulled airplane's the nose up to countermand an improper MCAS activation, causing MCAS to again push the airplane's nose down and that this cycle would repeat itself so long as the system

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<sup>3</sup> 14 CFR § 25.143(b).

continued to receive erroneous data from the airplane's AOA sensor.

156. Investigators found that JT610's pilots fought a terrifying 11-minute battle against MCAS for control of the airplane before the crash.



157. BOEING had not provided Lion Air or its pilots with information related to MCAS; the JT610 pilots' first experience with MCAS was in the terrifying minutes before JT610 crashed.

158. BOEING placed its own business interests ahead of aviation safety by continuing to represent to the FAA, its customers and the public, including Ethiopian Airlines that the Boeing 737-8 MAX airplane was safe to fly, even after the loss of JT610.

159. The FAA sided with BOEING, disregarding the safety of passengers and flight crews around the world, in continuing to permit the Boeing 737-8 MAX to fly.

160. The FAA supported BOEING's inappropriate business interests over the interests of aviation safety when it chose not to ground the Boeing 737-8 MAX.

161. On November 7, 2018, BOEING published an update to its operators' airplane

flight manuals (AFMs) intended to provide flight crews with information on MCAS and the procedures needed to address a runaway stabilizer on the 737 MAX aircraft. Pilots were told to deactivate MCAS by switching off the plane’s “STAB TRIM CUTOFF” switches, then to manually turn the stabilizer trim wheel located next to the pilot’s seat to bring up the nose of the airplane.

162. The same day, November 7, 2008, the FAA issued an Emergency Airworthiness Directive (AD 2018-23-51) requiring the operators of Boeing’s 737-8 and 737-9 MAX aircraft to incorporate Boeing’s update into their respective AFMs within 30 days.

163. In its emergency directive, the FAA described an “urgent safety of flight situation” caused by an “unsafe condition” in the MAX: “if an erroneously high single angle of attack (AOA) sensor input is received by the flight control system, there is a potential for repeated nose-down trim commands of the horizontal stabilizer. This condition, if not addressed, could cause the flight crew to have difficulty controlling the airplane, and lead to excessive nose-down attitude, significant altitude loss, and possible impact with terrain.”

164. Prior to March 10, 2019, BOEING knew and accepted that MCAS was defective and was working on a software fix to address its defects, while at the same time misrepresenting to the public, the FAA and its customers that the Boeing 737-8 MAX was safe to fly. Such knowledge and inaction demonstrated reckless indifference and conscious disregard for the flying public and the Decedent.

**BOEING INITIATED CRITICAL UPDATES TO THE 737-8 MAX’S  
AUTOMATED FLIGHT CONTROL SYSTEM AFTER JT610  
BUT DID NOT FIELD THEM IN TIME TO PREVENT THE ET302 DISASTER**

165. After the crash of JT610, BOEING quietly began to make design changes to the 737-8 MAX’s automated flight control system, which it planned to implement by way of an MCAS

“software update.”

166. Following the crash of ET302, BOEING confirmed that it had for several months “been developing a flight control software enhancement for the 737 MAX, designed to make an already safe aircraft even safer.”

167. BOEING continued to describe its 737-8 MAX airplane as a “safe aircraft” despite the fact that two Boeing 737-8 MAX airplanes had crashed in the prior 5 months with a total of 346 lives lost – the second-highest fatal accident rate for a commercial aircraft model in the modern era.

168. According to BOEING, the MCAS software update was developed “to provide additional layers of protection if the AOA sensors provide erroneous data.”

169. BOEING failed to acknowledge that the initial version of MCAS, installed in both JT610 and ET302, did not provide 737-8 MAX pilots with even a single layer of protection from erroneous data provided by a defective AOA sensor.

170. The MCAS software update that BOEING was working on, even as it maintained that the Boeing 737-8 MAX was completely safe, is advertised to include:

- a. MCAS AOA Sensor Enhancements – The flight control system will now compare inputs from both AOA sensors. If the sensors disagree by 5.5 degrees or more with the flaps up, MCAS will not activate and an indicator on the flight deck display (the “disagree alert”) will alert the pilots to the discrepancy;
- b. MCAS Activation Enhancements – If MCAS is activated in abnormal conditions, it will only provide one input for each elevated AOA event; and
- c. MCAS Command Limit – MCAS can never command more stabilizer input than

can be counteracted by the flight crew pulling back on the column. The pilots will always have the ability to override MCAS and manually control the airplane.

171. In addition to the MCAS software update, BOEING decided that pilots already type-rated to fly the Boeing 737 should be required to undergo additional computer-based training and manual review before being allowed to fly the 737-8 MAX.

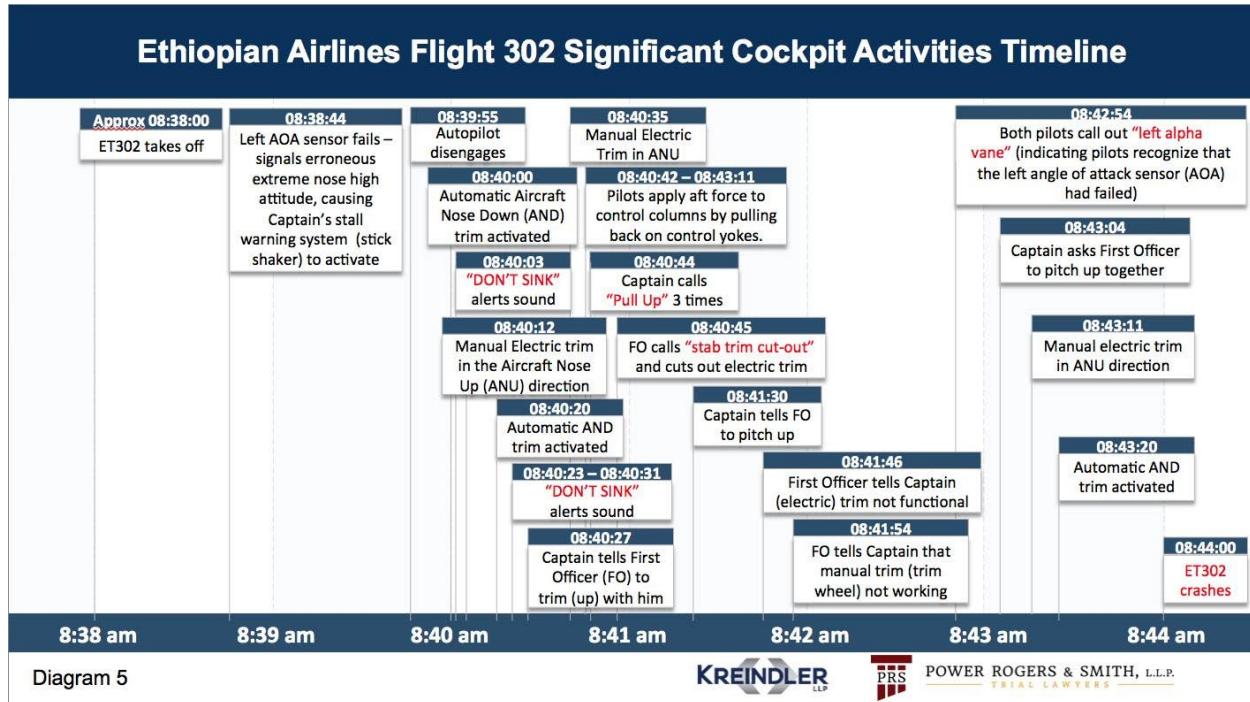
172. The additional requirements allegedly were designed to provide pilots with an “enhanced” understanding of the 737-8 MAX Speed Trim System, including the MCAS function, associated existing crew procedures, and related software changes.

173. BOEING describes the new training and review program as “enhanced,” but fails to acknowledge that the previous self-guided computer training program given to the pilots of JT610 and ET302 did not include any information or training on the MCAS.

174. Rather than grounding the Boeing 737-8 MAX until it was fixed and made safe, BOEING chose to prioritize its bottom line over safety, keeping its Boeing 737-8 MAX airplane in service while assuring its customers, the FAA and the public that the airplane was safe to fly. Such acts and omissions, demonstrated reckless indifference and conscious disregard for the safety of the flying public and the Decedent.

175. On March 10, 2019 the Boeing 737-8 MAX designated by Ethiopian Airlines to operate ET302 took off from Addis Ababa containing the same MCAS defects as the airplane used by Lion Air to operate JT610.

**DEFECTS IN THE BOEING 737-8 MAX AIRPLANE CAUSED THE CRASH OF  
ETHIOPIAN AIRLINES FLIGHT 302 AND THE LOSS OF 157 LIVES**



176. On March 10, 2019, Decedent, MATTEO RAVASIO, was a fare-paying passenger on board ET302.

177. ET302, a regularly-scheduled commercial flight, departed Addis Ababa Bole International Airport at 8:38 AM local time (5:38 A.M UTC) bound for Jomo Kenyatta International Airport in Nairobi, Kenya.

178. Within a minute after takeoff, ET302's left AOA sensor recorded erroneous values and its left stall warning system (stick shaker) activated and remained active until near the end of the flight.

179. ET302's flight data recorder later revealed that shortly after take-off, the airplane's left AOA sensor data suddenly deviated significantly from the right AOA sensor data; the left

AOA sensor data reached a maximum value of 74.5 degrees nose up, an erroneous and implausible nose high AOA, while the right AOA sensor data reached a maximum value of 15.3 degrees.

180. ET302 also experienced airspeed, altitude and flight director pitch bar values on its left side that deviated from the airplane's right-side values, with the left side values measuring notably lower than the right-side values.

181. The erroneous and implausible data transmitted by ET302's left AOA sensor indicated to the airplane that it was at an extreme nose high attitude and at risk of stalling, triggering the airplane's left stall warning system (stick shaker) to activate.

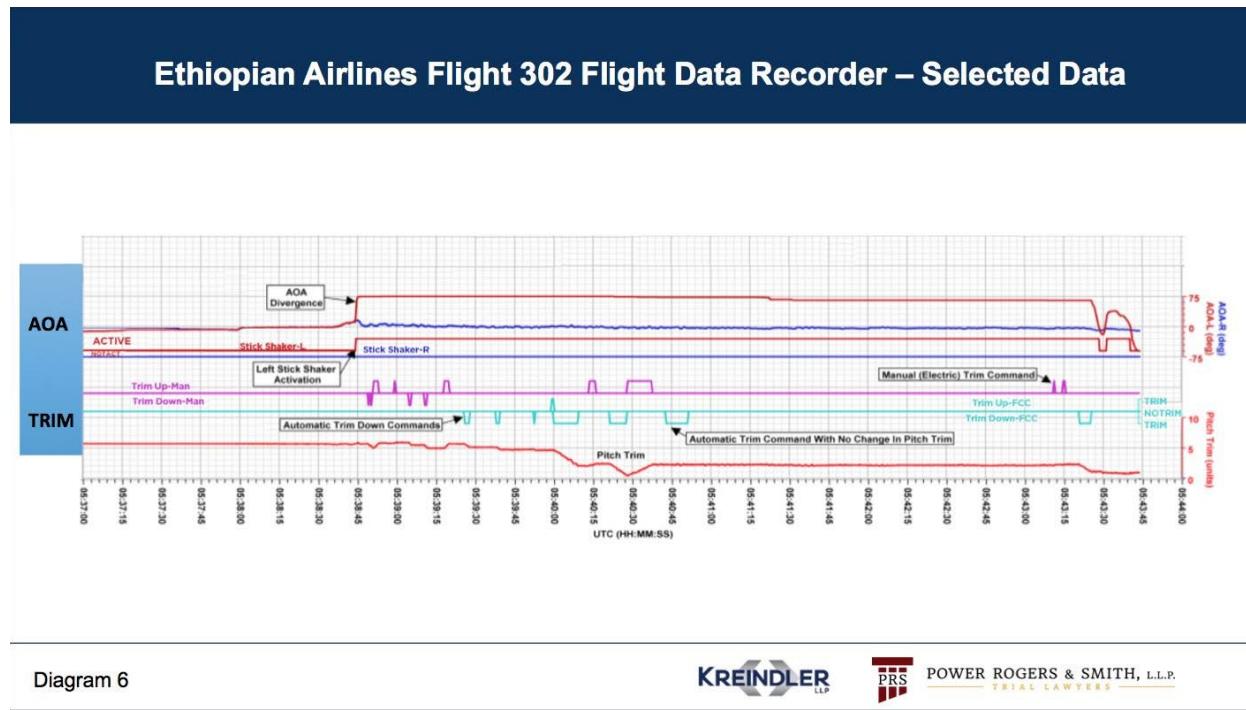
182. The erroneous data from ET302's left AOA sensor also caused the airplane's MCAS to activate and command automatic nose down trim inputs.

183. ET302's flight crew followed BOEING's recommended procedures: the airplane's cockpit voice recorder has the First Officer calling out "stab trim cut-out" twice after MCAS dove the airplane down toward the ground, followed by the captain's concurrence, indicating that the pilots shut off the electric trim.

184. ET302's flight crew, however, found it completely impossible to manually control the forces on the airplane's yoke.

185. Despite both pilots desperately pulling back on the yoke and attempting to manually trim the airplane's nose up together, they could not pull the airplane out of the MCAS-commanded dive.

186. Shortly before the crash, ET302's desperate pilots reengaged the electric trim and began trimming the airplane's nose back up, but MCAS again activated and pushed the nose down.



187. At 8:44 AM local time (5:44 AM UTC), ET302 disappeared from radar and impacted terrain approximately 28 miles southeast of the airport, destroying the airplane and killing all 157 people on board.

188. ET302 hit the ground with a nose-down dive angle of 40 degrees.

189. Decedent, MATTEO RAVASIO, suffered extreme fear prior to impact and was killed when ET302 crashed.

190. The ET302 disaster demonstrated that BOEING and the FAA had not properly responded to the JT610 disaster, in particular that the Boeing 737-8 MAX airplane should have been grounded after the JT610 crash.

191. The ET302 disaster demonstrated that the information provided by BOEING to the FAA and 737-8 MAX pilots, including the recommended emergency procedure, was insufficient to address the airplane's MCAS defect.

192. The ET302 disaster again demonstrated that the Boeing 737-8 MAX violated the FAA Airworthiness Standards for Commercial Aircraft<sup>4</sup>, which require that airplanes must be safely controllable and maneuverable during all phases of flight and that it must be possible to make safe and smooth transitions from one flight condition to another without exceptional piloting skill, alertness, or strength.

193. Even after the crash of ET302, BOEING continued to insist that the 737-8 MAX airplane was safe.

194. In the wake of the ET302 disaster, Boeing's CEO, Dennis Muilenburg, spoke twice with President Donald J. Trump to assure him that the Boeing 737-8 MAX was safe and should not be grounded.

195. The FAA continued to side with BOEING over safety; the U.S. delayed the grounding of the airplane, while Secretary of Transportation Elaine Chao, who oversees the FAA, flew from Austin, Texas to Washington, D.C. in a Boeing 737-8 MAX to demonstrate her confidence in the airplane's safety.

196. Almost immediately after the ET302 disaster, however, airlines and countries around the world grounded the Boeing 737-8 MAX because of safety concerns.

197. Many American passengers refused to board Boeing 737-8 MAX airplanes because of safety concerns.

198. On March 13, 2019, the FAA finally determined that the Boeing 737-8 and 737-9 MAX airplanes must be immediately grounded because they were unsafe.

199. On April 5, 2019, BOEING's CEO issued a statement acknowledging that the crashes of JT610 and ET302 were caused by MCAS and admitted that “[w]e have the

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<sup>4</sup> 14 CFR § 25.142(b).

responsibility to eliminate this risk, and we know how to do it.” He continues, however, to deny that the airplane was not safe and BOEING’s acts and omissions demonstrated reckless indifference and conscious disregard for the safety of the flying public and the Decedent.

**COUNT 1 – STRICT PRODUCTS LIABILITY AGAINST BOEING**

200. Plaintiff hereby incorporates and realleges each of the preceding paragraphs as though fully set forth herein.

201. At the time when BOEING sold ET302 to Ethiopian Airlines, the airplane was defective and unreasonably dangerous in one or more of the following respects:

- a. The engine placement on ET302 negatively disrupted the airplane’s longitudinal stability, causing a propensity for dangerous nose-up pitching;
- b. ET302’s flawed aerodynamic characteristics increased the risk of aerodynamic stall during flight;
- c. ET302 was equipped with defective AOA sensors that were prone to failure;
- d. ET302’s left AOA sensor transmitted inaccurate, invalid and/or implausible data that triggered the airplane’s left stall warning system and activated the airplane’s MCAS, causing the airplane to dive down toward the ground;
- e. ET302’s MCAS was defective;
- f. BOEING’s defective design caused ET302’s MCAS to activate based on the single input of a failed AOA sensor without cross-checking its data with the properly functioning right AOA sensor;
- g. BOEING’s defective design caused ET302’s MCAS to accept erroneous and even implausible data as valid;

- h. BOEING's defective design caused ET302's MCAS to repeatedly activate based on the inaccurate and implausible data supplied by the malfunctioning left AOA sensor, even as the pilots desperately fought to pull the airplane out of the dive commanded by MCAS;
- i. BOEING's defective design caused ET302's MCAS to fight against the actions of the pilots who were fighting to bring the airplane out of the dive and made it impossible for the pilots to pull the airplane out of the dive after they followed BOEING's recommended procedure and disengaged the airplane's electric trim;
- j. BOEING's recommended emergency procedures that it provided to Ethiopian Airlines and other airlines after the crash of LT610 were not sufficient for the pilots of ET302 to handle the emergency caused by ET302's defective left AOA sensor and defective MCAS;
- k. BOEING failed to design ET302 with the capability to provide its pilots with sufficient and timely warning that the airplane's MCAS system had been activated;
- l. ET302 was defective, in part, because it did not have the AOA indicator, which denied its pilots access to important information, including that the left AOA sensor was providing erroneous and implausible data; and
- m. ET302 was defective, in part, because it did not have the AOA disagree light, which denied its pilots access to important information, including that the left and right AOA sensors of ET302 were providing different data.

202. BOEING's design choices allowed for inaccurate, invalid and/or implausible AOA data to cause the MCAS to unsafely push the plane's nose down at low altitude and propel it into terrain.

203. By reason of BOEING's design choices, ET302 was made vulnerable to a single point of failure.

204. By reason of BOEING's design choices, ET302 lacked proper and effective warnings and instructions:

- a. BOEING failed to properly and effectively warn pilots that inaccurate data supplied by the 737-8 MAX's selected AOA sensor could cause MCAS to issue repeated nose-down trim commands;
- b. BOEING failed to properly and effectively warn pilots that MCAS was capable of causing the 737-8 MAX 's horizontal stabilizer to push the airplane's nose down up to four times farther than it informed the FAA during the airplane's certification process;
- c. BOEING failed to properly and effectively warn 737-8 MAX pilots that MCAS would reset itself each time pilots pulled the nose of the airplane up after the MCAS caused the airplane to dive as a result of erroneous and implausible data from a malfunctioning AOA sensor;
- d. BOEING failed to properly and effectively warn its customers after the JT610 crash that the Boeing 737-8 MAX was defective and that BOEING was developing a software fix to cure the defect that caused the JT610 crash;
- e. BOEING failed to properly and effectively instruct 737-8 MAX pilots how to recognize runaway stabilizer trim caused by the improper activation of MCAS; and
- f. BOEING failed to properly and effectively instruct 737-8 MAX pilots how to address and remediate runaway stabilizer trim caused by the improper activation of MCAS.

205. BOEING's design of the 737-8 MAX aircraft, including but not limited to its AOA sensors and MCAS, was otherwise defective.

206. ET302 and its component parts, including but not limited to its AOA sensors and MCAS, were not altered or modified since they were manufactured by BOEING, or by a component part supplier to BOEING and were properly maintained up to the time of the ET302 crash.

207. As a direct and proximate cause of one or more of the aforesaid defective and unreasonably dangerous conditions in the Boeing 737-8 MAX airplane, ET302 departed controlled flight and crashed, causing the death of Decedent and the damages suffered by his surviving family members.

208. By reason of the foregoing, ET302 was an unreasonably dangerous and defective airplane and BOEING should be held strictly liable for the death of Decedent and all damages sustained by his surviving family members.

209. As a direct and legal result of ET302's defects, Decedent suffered extreme pre-impact fear, pain and suffering and was killed in the crash.

210. As a direct and legal result of ET302's defects, Decedent's surviving family members have suffered, and will continue to suffer, pecuniary damages, including loss of financial support, household services, funeral expenses, the loss of the Decedent's love, society, solace, companionship, comfort, care, assistance, protection, affection and moral support and they suffer severe grief, sorrow and mental suffering.

**COUNT 2 – NEGLIGENCE AND WILLFUL  
AND WANTON CONDUCT AGAINST BOEING**

211. Plaintiff hereby incorporates and realleges each of the preceding paragraphs as though fully set forth herein.

212. At all relevant times, BOEING owed a duty to the passengers and flight crew of ET302 to use reasonable care in designing, manufacturing, assembling, testing, maintaining, servicing and selling its commercial aircraft, and the 737-8 MAX in particular, so as to not cause injury and death.

213. BOEING negligently, with conscious disregard and reckless indifference breached its duty of care owed to the passengers and crew of ET302, and Decedent in particular, through one or more of the following acts and omissions:

- a. Upon information and belief, the System Safety Analysis (SSA) of MCAS performed by BOEING, which was utilized by the FAA in its certification of the flight control system on the 737 MAX, contained multiple understatements and omissions related to the system's automated capabilities:
  - i. the SSA significantly understated the MCAS's authority to command trim movements of the horizontal stabilizer;
  - ii. the Boeing 737-8 MAX was capable of moving the airplane's horizontal stabilizer more than four times farther than originally indicated in the SSA, causing flight conditions that would be nearly impossible for pilots to manually fight against due to forces on the horizontal stabilizer; and
  - iii. the SSA failed to account for the fact that MCAS was designed so that it would reset itself after the pilot's countermanded the MCAS automatic nose down trim, thereby ignoring the possibility that plane's nose would be pushed down repeatedly based on the erroneous data supplied by a single failed AOA sensor;

- b. a fundamental rule in airplane design is that a single point failure should not cause an aviation disaster;
- c. airplanes are supposed to be designed with redundant systems, so that the failure of one system cannot cause an aviation disaster;
- d. the SSA assessed potential MCAS failure as “hazardous,” a classification that should have precluded certification for a design which allowed MCAS to activate based on input from a single sensor, without cross-checking the data against the data supplied by the right AOA sensor or otherwise verifying the data;
- e. BOEING negligently failed to provide the AOA Indicator and Disagree Light as a standard feature of the Boeing 737-8 MAX, which would have provided valuable information to ET302’s pilots that would have alerted them of a discrepancy in data supplied by the airplane’s left and right AOA sensors; and
- f. BOEING negligently failed to provide airlines and pilots operating the Boeing 737-8 MAX with sufficient guidance and instructions to regain control of an airplane endangered by the airplane’s defects.

214. BOEING’s conduct amounted to gross negligence and demonstrated a wanton disregard for the safety of the Decedent and all other passengers and flight crew it exposed to the defects of the Boeing 737-8 MAX.

215. Strong public policy supports the imposition of punitive damages against BOEING because:

- a. BOEING intentionally, recklessly and negligently designed and added an unsafe feature to the Boeing 737-8 MAX because adding that feature was a cheap, easy way to correct the airplane’s inherent aerodynamic problem;

- b. BOEING's intentional, reckless and negligent actions throughout the design, manufacture and certification process of the Boeing 737-8 MAX demonstrated time and time again that Boeing knowingly put its financial interests ahead of aviation safety;
- c. The JT610 disaster and its tragic loss of life was not enough to move BOEING to recommend that its customers ground their 737-8 MAX airplanes in order to avoid another disaster;
- d. Even after ET302, BOEING continued to fight against grounding the 737-8 MAX, causing airlines to put their passengers and flight crews at risk for several days until the weight of enormous public pressure forced the FAA to ground the airplane;
- e. BOEING continues to deny that it made mistakes in its design and manufacture of the 737-8 MAX and refuses to admit that the Boeing 737-8 MAX is defective, even as it works to fix the design defects proven to have caused two aviation disasters and the loss of 346 lives;
- f. BOEING CEO Dennis Muilenburg has publicly admitted that Boeing "owns" the responsibility to correct the MCAS software, and knows how to do it, yet refuses to admit that the MCAS software was unsafe; and
- g. BOEING continues to be led by the same officials who approved the Boeing 737 MAX project, who rushed the design and manufacture of the airplane and who continue to deny the existence of a problem with the 737-8 MAX or properly respond to the tragic events, which revealed that the airplane's MCAS was a deadly defect.

216. As a direct and legal result of BOEING's negligence, Decedent suffered extreme fear, pain and suffering and was killed in the crash.

217. As a direct and legal result of one or more of BOEING's negligent acts and omissions, Decedent's surviving family members have suffered, and will continue to suffer, pecuniary damages, including loss of financial support, household services, funeral expenses, and the loss of the Decedent's love, society, solace, companionship, comfort, care, assistance, protection, affection and moral support, and they suffer severe grief, sorrow and mental suffering.

**COUNT 3 – BREACH OF WARRANTY AGAINST BOEING**

218. Plaintiff incorporates and realleges each of the paragraph set forth above as though fully set forth herein.

219. BOEING expressly and/or impliedly warranted and represented that its Boeing 737-8 MAX airplanes, in particular ET302, and all component parts, including AOA sensors and MCAS and all instructions and warnings regarding the use of its 737-8 MAX airplanes, were airworthy, of merchantable quality and safe for the purpose of commercial air travel for which BOEING designed, manufactured, sold and intended the airplane to be used.

220. BOEING breached its express and/or implied warranties in that ET302 was not airworthy, was not of merchantable quality and was not safe to be used for commercial air travel; to the contrary, ET302 was not airworthy and was unsafe.

221. The passengers and crew of ET302, including Decedent, were intended third-party beneficiaries of BOEING's warranties.

222. Decedent, as a fare-paying passenger aboard ET302, reasonably relied on BOEING's warranties to his detriment.

223. As a direct and legal result of BOEING's breach of its warranties, Decedent suffered extreme fear, pain and suffering and was killed in the crash.

224. As a direct and legal result of BOEING's breach of its warranties, Decedent's surviving family members have suffered, and will continue to suffer, pecuniary damages, including loss of financial support, household services, funeral expenses, and the loss of the Decedent's love, society, solace, companionship, comfort, care, assistance, protection, affection and moral support, and they suffer severe grief, sorrow and mental suffering.

**COUNT 4 -- STRICT PRODUCTS LIABILITY AGAINST ROSEMOUNT**

225. Plaintiff hereby incorporates and realleges each of the preceding paragraphs as though fully set forth herein.

226. At all relevant times, ROSEMOUNT was a designer, manufacturer and seller of aerospace products, including AOA sensors.

227. ROSEMOUNT designed, tested, manufactured and sold the AOA sensors installed in BOEING's 737-8 MAX airplanes, including ET302.

228. At the time that BOEING sold ET302 to Ethiopian Airlines, the airplane was defective and unreasonably dangerous in one or more of the following respects:

- a. ET302 included AOA sensors sold by ROSEMOUNT that were subject to an unacceptable rate of failure; and
- b. ET302 included AOA sensors sold by ROSEMOUNT that provided erroneous and implausible data that triggered the airplane's left stall warning system and MCAS, causing the airplane to depart controlled flight and crash.

229. At the time ROSEMOUNT sold the AOA sensors installed on ET302 to BOEING they were defective and unusually dangerous and their condition was not altered prior to the crash.

230. As a direct and proximate cause of the defective condition of ET302's AOA sensors, ET302 departed controlled flight and crashed, causing the death of Decedent and the damages suffered by his surviving family members.

231. By reason of the foregoing, the AOA sensors installed on ET302 were unreasonably dangerous and defective and ROSEMOUNT should be held strictly liable for the death of the Decedent and all damages sustained by his surviving family members.

232. As a direct and legal result of the defective condition of the AOA sensors installed on ET302, Decedent suffered extreme fear, pain and suffering and was killed in the crash.

233. As a direct and legal result of the foregoing, Decedent's surviving family members have suffered, and will continue to suffer, pecuniary damages, including loss of financial support, household services, funeral expenses, and the loss of the Decedent's love, society, solace, companionship, comfort, care, assistance, protection, affection and moral support, and they suffer severe grief, sorrow and mental suffering.

#### **COUNT 5 – NEGLIGENCE AGAINST ROSEMOUNT**

234. Plaintiff hereby incorporates and realleges each of the preceding paragraphs as though fully set forth herein.

235. At all times herein relevant, ROSEMOUNT owed a duty to the passengers and flight crews of Boeing 737-8 MAX airplanes to use reasonable care in designing, manufacturing, assembling and testing the AOA sensors installed on those airplanes, including ET302, so as to not to cause injury and death.

236. ROSEMOUNT breached its duty to the passengers and crew of ET302 in designing and manufacturing the AOA sensors installed on ET302 and in its work with BOEING to incorporate them into the airplane.

237. As a direct and proximate result of one or more ROSEMOUNT's negligent acts and omissions, ET302 crashed, killing Decedent and all others on board.

238. As a direct and legal result of ROSEMOUNT's negligence, Decedent suffered extreme fear, pain and suffering and was killed in the crash.

239. As a direct and legal result of ROSEMOUNT's negligence, Decedent's surviving family members have suffered, and will continue to suffer, pecuniary damages, including loss of financial support, household services, funeral expenses, the loss of the Decedent's love, society, solace, companionship, comfort, care, assistance, protection, affection and moral support, and they suffer severe grief, sorrow and mental suffering.

**COUNT 6 -- BREACH OF WARRANTY AGAINST ROSEMOUNT**

240. Plaintiff hereby incorporates and realleges each of the preceding paragraphs as though fully set forth herein.

241. ROSEMOUNT expressly and/or impliedly warranted and represented that the AOA sensors it designed, manufactured, tested and sold for use in Boeing 737-8 MAX airplanes, including ET302, were airworthy, of merchantable quality, and safe for the purpose of commercial air travel.

242. ROSEMOUNT breached its express and/or implied warranties because its AOA sensors installed on ET302 were not airworthy, were not of merchantable quality, and were not safe to be used for commercial air travel; in particular, their high rate of failure made them unsafe to be used as a single-point trigger for automated systems like MCAS.

243. The crew members and passengers of ET302, including Decedent, were intended third-party beneficiaries of ROSEMOUNT's warranties.

244. Decedent, as a fare-paying passenger aboard ET302, reasonably relied on

ROSEMOUNT's warranties to his detriment.

245. As a direct and legal result of ROSEMOUNT's breach of its warranties, Decedent suffered extreme fear, pain and suffering and was killed in the crash.

246. As a direct and legal result of ROSEMOUNT's breach of its warranties, Decedent's surviving family members have suffered, and will continue to suffer, pecuniary damages, including loss of financial support, household services, funeral expenses, the loss of the Decedent's love, society, solace, companionship, comfort, care, assistance, protection, affection and moral support, and they suffer severe grief, sorrow and mental suffering.

**PRAYER FOR RELIEF**

WHEREFORE, MANUELA FILI, Individually as a Surviving Spouse and as Special Administrator of the Estate of MATTEO RAVASIO, Deceased, and on behalf of all Surviving Beneficiaries, demands judgment against Defendants, THE BOEING COMPANY and ROSEMOUNT AEROSPACE, INC., in an amount to be determined at trial for the compensatory damages alleged, together with costs, interest, attorney's fees, and any such other and further relief that the Court deems just and proper.

WHEREFORE, MANUELA FILI, Individually as a Surviving Spouse and as Special Administrator of the Estate of MATTEO RAVASIO, Deceased, and on behalf of all Surviving Beneficiaries, demands judgment against Defendants, THE BOEING COMPANY and ROSEMOUNT AEROSPACE, INC., in an amount to be determined at trial for the exemplary damages alleged, together with costs, interest, attorney's fees, and any such other and further relief that the Court deems just and proper.

**JURY DEMAND**

Plaintiffs demand a trial by jury on all issues so triable.

Dated: Chicago, Illinois  
July 1, 2019

/s Todd A Smith  
One of the Attorneys for the Plaintiff

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